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REMARKS1. **Claim Status**

Claims 1, 3-6, 10-18, 20-31, 35-37, 39, 41-65 are pending and under consideration.

2. **35 U.S.C. § 103 Claim Rejections**

Claims 1, 3-6, 10-18, 20-31, 35-37, 39, 41-65 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Lashier et al., U.S. Patent 5,689,028 (hereafter "Lashier"), Araki et al., U.S. Patent 5,750,816 (hereafter "Araki"), and Kreischer et al., U.S. Patent 6,380,451 (hereafter "Kreischer"), considered separately. Specifically, the Office Action dated November 5, 2007 (hereafter "Office Action"), restates the obviousness rejections of the Office Action dated March 27, 2007, that processes of Lashier, Araki, and Kreischer appear "indistinguishable from the claimed processes." The Office Action further states that the arguments presented in the Office Action Response dated August 27, 2007, are "are not deemed to be persuasive because" Lashier, Araki, or Kreischer "discloses essentially the same step that has been added to the independent claims." The Applicants respectfully traverse these claim rejections.

Applicants respectfully submit that Lashier, Araki, and Kreischer, considered singly or in combination, do not establish a *prima facie* case of obviousness as to the pending claims. According to MPEP § 2142, three basic criteria must be met to establish a *prima facie* case of obviousness:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.

Additionally, the Examiner has the burden of proof with respect to the elements of the *prima facie* case of obviousness is also well defined in MPEP § 2142:

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. To support the conclusion that

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the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

a. 35 U.S.C. § 103 Claim Rejections – Claims 1, 18, 37, 57

Independent claims 1, 18, 37, and 57 each recite that “material passed through the reboiler is maintained below about 190 °C.” Applicants submit that Lashier, Araki, or Kreischer do not disclose the feature that “material passed through the reboiler is maintained below about 190 °C” and that the Office Action freely concedes that Lashier, Araki, or Kreischer “do not set forth a reboiler distillation temperature of below about 190 °C.” See page 3, 5, and 7 of the Office Action. However, the Office action attempts to cure this deficiency by stating that Lashier, Araki, Kreischer teach “that any reaction conditions which can affect the above-mentioned steps can be used” and as such it is of the “position that the method set forth in” Lashier, Araki, or Kreischer “clearly includes the newly added step (b) of the claims” and the “position that the temperature of separation into at least one product stream containing the olefin oligomerization product and at least one heavies stream in the method of” Lashier, Araki, or Kreischer “is expected to be the same or similar to applicants’ claimed temperature since the product streams are seen to be the same or similar.” Applicants respectfully submit that the arguments presented in the Office Action do not present a *prima facie* case for obviousness on at least four bases.

First, the Office Action relies upon statements or passages within Lashier, Araki, or Kreischer which appear to teach (without admitting that such is true) “that any reaction conditions . . . can be used.” See page 3, page 5, and page 7 of the Office Action. Applicants respectfully submit that the independent claims are directed to product isolation, not reaction conditions (which relate to product formation), and that the reboiler temperature is a feature of product isolation and not a reaction condition. Evidence that the independent claims are directed to product isolation and that reboiler temperature is a feature of product isolation includes separately or in combination:

1. Each independent claim recites that the process “inhibit[s] or limit[s] the decomposition of a halide-containing olefin oligomerization catalyst system during **recovery of an olefin oligomerization product**” (emphasis added).

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2. Each independent claim recites "forming an intermediate stream by contacting an olefin oligomerization reactor effluent stream which comprises . . . catalyst system . . . with an alcohol" before the separation step. Lashier, Araki, and Kreischer each disclose that such contact step deactivates the catalyst system.
3. Each independent claim recites "the separation comprises a distillation comprising a reboiler."

Therefore, each independent claim relates to recovering an olefin oligomerization product after product formation is completed using a "distillation comprising a reboiler and material passed through the reboiler is maintained below about 190 °C" which is admitted as missing from Lashier, Araki, and Kreischer. As the distillation and reboiler temperature relate to product recovery, statements within Lashier, Araki, or Kreischer relating to reaction conditions do nothing to cure deficiencies within their teachings relating to product recovery and reboiler temperatures. Consequently, for this reason independent claim 1, 18, 37, and 57 are not obvious in light of Lashier, Araki, and Kreischer considered separately.

Second, even if one could read reaction conditions to include features relating to product isolation, without admitting that such is proper, relying upon statements or passages teaching that any reaction conditions, or even product recovery conditions, is analogous to a statement that a claim is encompassed by another disclosure. MPEP 2144.08 II states that the "fact that a claimed species or subgenus is encompassed by a prior art genus is not sufficient by itself to establish a *prima facie* case of obviousness." This point has been reinforced by court decisions including *In re Baird*, 16 F.3d 380, 382, 29 USPQ2d 1550, 1552 (Fed. Cir. 1994), *In re Jones*, 958 F.2d 347, 350, 21 USPQ2d 1941, 1943 (Fed. Cir. 1992), and *In re Deuel*, 51 F.3d 1552, 1559, 34 USPQ2d 1210, 1215 (Fed. Cir. 1995). In particular, within *In re Jones*, 958 F.2d 347, 350, 21 USPQ2d 1941, 1943 (Fed. Cir. 1992), the Federal Circuit "decline[d] to extract from *Merck & Co. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir. 1989) the rule that... regardless of how broad, a disclosure of a chemical genus renders obvious any species that happens to fall within it." The assertion that the teachings of Lashier, Araki, or Kreischer include any oligomerization reaction conditions, or even any oligomerization product recovery conditions, recognizes that the genus of these conditions include the species of several

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independent features. In relation to oligomerization product recovery, such independent features can include the number and arrangement of the distillation towers, distillation tower geometry (e.g. height and width), distillation tower reflux ratio, number and position of distillation tower of-takes (e.g. overhead, bottoms, and sidedraw), temperature at points within the distillation tower, and distillation tower reboiler temperature, among others. In such situations, a proper *prima facie* case of obviousness must be established. One of the required criteria for a *prima facie* case of obviousness is that the reference(s) must teach or suggest each and every limitation of the claim(s). The Office Action admits that Lashier, Araki, and Kreischer do not teach that "material passed through the reboiler is maintained below about 190 °C. Consequently, the Office Action has failed to present a *prima facie* case of obviousness in relation to independent claims 1, 18, 37, and 57.

Third, the Office Action position statement that "the temperature of separation into at least one product stream containing the olefin oligomerization product and at least one heavies stream in the method . . . is expected to be the same or similar to applicants' claimed temperature since the product streams are seen to be the same or similar" attempts to show that Lashier, Araki, and Kreischer inherently contain the missing product recovery feature(s) of the present claims not specifically taught within Lashier, Araki, or Kreischer based upon oligomerization product similarities. However, such a statement assumes that product recovery features such as distillation and distillation reboiler temperature control the oligomerization product(s) produced by a particular catalyst.

One of ordinary skill in the art recognizes that olefin oligomerization product formation and oligomerization product recovery are two independent processes within an overall process for producing oligomerization product(s). Olefin oligomerization product formation is controlled by catalyst identity, catalyst preparation, and oligomerization steps, among other steps, which can control product identity, product distribution, reactor product purity, and by-product formation, among other features. Oligomerization product recovery can include steps such as catalyst deactivation, treatment of the deactivated catalyst stream (e.g. water or caustic washes), and product separation steps (e.g. filtration, distillation, among other steps), which may, or may not, impact the finished product purity. However, oligomerization product recovery features do not

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necessarily control the general properties of product identity or similarity as implicated by the Office Action.

Additionally, Applicants would respectfully like to point to Examples 1 and 2 of Araki. These examples show a heater temperature of 230 °C and an evaporator temperature of 200 °C, respectfully. These temperature are well above that wherein the “material passed through the reboiler is maintained below about 190 °C.” However, based upon the Office Action argument that similar product recovery features lead to similar oligomerization products, Examples 1 and 2 of Araki should lead to non-similar product streams. Consequently, Applicants respectfully submit that product identity or similarity alone, without admitting that such exist between the cited references and the present disclosure, can not be relied upon to show that Lashier, Araki, or Kreischer inherently teach that “material passed through the reboiler is maintained below about 190 °C” as recited in independent claims 1, 18, 37, and 57 because oligomerization product recovery steps do not necessarily control product identity or similarity. For this reason Lashier, Araki, and Kreischer considered separately do not teach each and every limitation of independent claims 1, 18, 37, and 57.

Fourth, relating to the opinion that the missing product recovery feature(s) of the present claims not specifically taught by a cited reference can inherently be supplied on the basis of oligomerization product similarities, independent claims 1, 18, 37, and 57 recite that they relate to processes “to inhibit or limit the decomposition of a halide-containing olefin oligomerization catalyst system during recovery of an olefin oligomerization product.” The specification further relates that the processes relate to “preventing or decreasing formation of hydrogen halide gases” to “prevent or decrease process equipment corrosion.” See paragraph 4 of the present application. The present specification also shows that the decomposition of a halide-containing olefin oligomerization catalyst, to produce hydrogen halide gas, occurs due to increased temperatures present in a reboiler of a distillation column during recovery of an olefin oligomerization product. See Specification Examples.

Lashier, Araki, and Kreischer do not discuss hydrogen halide formation and/or separation equipment corrosion. Neither do they disclose the impact that hydrogen halide formation during oligomerization product separation would have on an oligomerization product. While the

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reaction products may be the same or similar, without admitting that such is true, it is not necessarily true that “inhibit[ing] or limit[ing] the decomposition of a halide-containing olefin oligomerization catalyst system during recovery of an olefin oligomerization product” will have an impact on the oligomerization product(s). Consequently, the Office Action has not provided any evidence that the claim feature(s) missing in Lashier, Araki, and Kreischer, would lead to any oligomerization product features measured by Lashier, Araki, or Kreischer to support the opinion that that oligomerization product similarities prove disclosure of specific product recovery features. For this reason, the Office Action fails to present a *prima facie* case of obviousness in relation to independent claims 1, 18, 37, and 57.

For the above-cited reasons, Applicants respectfully submit that the Office Action has failed to present a *prima facie* case of obviousness in relation to the pending independent claims. Consequently, independent claims 1, 18, 37, and 57, and any claim which depends there from, claims 3-6, 10-17, 20-31, 35-36, 39, 41-56, and 58-65, are allowable over the cited references. Applicants respectfully request that the 35 U.S.C. § 103 rejections of the pending claims in view of Lashier, Araki, and Kreischer considered separately be withdrawn.

b. 35 U.S.C. § 103 Claim Rejections – Claim 18

Applicants note that the Office Action provided no rebuttal argument in relation to the failure of Lashier, Araki, and Kreischer to suggest or teach the claim feature in Claim 18 reciting “minimizing water content in an alcohol.” Applicants kindly request review, comment, and reconsideration of claim 18 based upon the patentability arguments presented in the Office Action Response dated August 27, 2007, and repeated below.

In relation to independent claim 18, the process of claim 18 includes a step of “minimizing water content in an alcohol.” Lashier, Araki, and/or Kreischer do not teach or suggest “minimizing water content in an alcohol” used to form “an intermediate stream by contacting an olefin oligomerization reactor effluent stream which comprises olefin product(s), catalyst system, and heavies with the alcohol.” In fact, because the alcohol is used to deactivate the catalyst system, water contained in the alcohol would not have been considered detrimental to the catalyst system deactivation. Consequently, independent claim 18 and claims 19-21, 24, 25, 27-36, 51, 53, and 56, which depend on claim 18, are allowable over the cited references.

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Applicants respectfully request that the rejection of claims 18, 20-21, 24, 25, 27-31, 35-36, 51, 53, and 56 be withdrawn.

3. Final Remarks

In commenting upon the cited references and the pending claims, certain details of distinction between the cited references and the pending claims have been mentioned to facilitate a better understanding of the claimed invention. The unclaimed distinctions are not intended to create any implied limitations in the claims. Additionally, not all distinctions between the cited references and Applicants' present invention have been presented by the Applicants. Applicants reserve the right to submit additional evidence demonstrating that Applicants' invention is novel and nonobvious in view of the cited references.

The foregoing remarks are intended to assist the Examiner in re-examining the application and, in the course of explanation, may employ shortened, more specific, or variant descriptions of some of the claim language. Such descriptions are not intended to limit the scope of the claims. The actual claim language should be considered in each case. Furthermore, the remarks only represent certain advantageous features and differences between the pending claims and the cited references that Applicants' attorney chooses to mention at this time. The remarks should not be considered exhaustive to all features which render the invention patentable.

Reconsideration of the pending claims is respectfully requested. In view of the foregoing remarks and the Office Action cited references, Applicants respectfully submit that the pending claims under consideration are in condition for allowance. The Examiner is invited to contact the undersigned patent attorney at (832) 813-4661 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,



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